*Chapter 13 Using computational estimation*

*with whole numbers Kristina Sims*

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| **Representative TN State Curriculum Standards**  *Kindergarten –*  GLEs  0006.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including  estimation, and reasonableness of the solution  Checks for Understanding  0006.1.2 Begin to develop the concept of estimation using concrete objects.  *Second Grade –*  GLEs  0206.2.1 Understand and use place value concepts to 1000.  Checks for Understanding  0206.2.3 Locate and interpret numbers on a number line.  0206.2.9 Apply appropriate methods to estimate and mentally calculate sums or differences with  ones, tens, and hundreds. | |
| http://images.betterworldbooks.com/039/Counting-on-Frank-Clement-Rod-9780395703939.jpg | Time: 10 Minutes  (Supplies: templates precut out, tape, marshmallows, sandwich baggies, filled estimation jar, paper plates, index card, number line, post-it notes)   * Have a jar filled with noodles and have students guess how many are in the jar. * Read pages (1-15) * Next, the students will assemble, on top of a paper plate, a box using a template provided and tape. The students will guess how many marshmallows will fit into their box and record their estimation on a post-it and place on the number line provided. Half way through filling the box, I will give an opportunity for students to change their previous estimations. I will continue until the box is full and see who got the closest estimation to the actual marshmallows. (Fit as many marshmallows into the box so that the index card can still sit flat of the top of the box.) * Could incorporate mean, median and mode, if time permits. * I modified some ideas from <http://blog.aussiepumpkinpatch.com/2009/12/counting-on-frank.html> |

**Virtual Manipulatives**

*Time*: 10 Minutes

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| **Estimate**  <http://www.oswego.org/ocsd-web/games/Estimate/estimate.html>  *Description*: The students begin in Stage 1 and can progress through stage 8. A number line is given with a red arrow pointing to a point between zero and the other number (the highest number changes with each stage). The student is to estimate what number is being pointed to, then press the reveal button to receive the answer. Push “Next” to get to another estimation problem. |
| **Estimator Four**  <http://www.shodor.org/interactivate/activities/EstimatorFour/>  *Description*: Two players are selected. Options first chosen are time limit, accuracy, level, and types of problems (addition, multiplication, and/or percentage). Each student will estimate the answer to the equation provided and select a column to place a piece in. The next player does the same. The game is won when one person gets four pieces in a row |

**Activities from Textbook Time:** 5 Minutes Each/20 Minutes Total

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| Computational Estimation – Addition, Subtraction, Multiplication, or Division | Activity 13.1 “Over or Under”  Materials: signs with Over/Under, popsicle sticks |
| Computational Estimation – Multiplication or Division | Activity 13.7 “Jump to It”  Materials: calculator, activity sheets |
| Computational Estimation – Addition | Activity 13.3 “Best Choice”  Materials: Prepared cards with 3 answer options |
| Computational Estimation – Addition, Subtraction, Multiplication, or Division | Activity 13.2 “High or Low?”  Materials: Prepared computations with 4 possible estimation approaches |

**Lesson Plan**

Every Breath You Take

<http://illuminations.nctm.org/LessonDetail.aspx?ID=L243>

*Description*: Students will estimate how many breaths he/she takes in one hour. Students will use the activity sheet provided to collect data from peers in the class and record. The students will take the information and construct a graph to display all guesses. (The type of graph is each student’s choice.) From that, the students will come up with the mean, median, and mode. Students brainstorm ideas of how to actually find out how many breaths you take in one day. Then they carry out their idea and compare with peers.